REMARKS

Reconsideration in light of the following remarks is respectfully requested. Claims 54-81 are pending. Applicants have amend claims 54-70 and 72-81.

Applicants thank the Examiner for indicating that claims 54, 60, 68, 74, 75, and 81 are free from prior art.

Claim Rejections – 35 U.S.C. § 112, First Paragraph

Claims 54-81 have been rejected as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one of ordinary skill that the inventor had possession of the invention at the time the application was filed. The Examiner has stated that the specification lacks support for plants comprising a center head diameter of 3 to 8 inches at maturity when exposed to the four different heat regimens claimed.

Applicants respectfully disagree with the above statement. The specification has support for the claim language. Specifically, the specification indicates on page 2, lines 20-30, that the invention includes broccoli plant that have a "commercially acceptable" head after exposure to the four different heat regimens claims. The specification further indicates on page 5, lines 27-28, that a "commercially acceptable" head is one in the range of 3 to 8 inches.

Claims 55-59, 62-66, 69-73 and 76-80 have been rejected as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one of ordinary skill that the inventor had possession of the invention at the time the application was filed. The Examiner has stated that the specification lacks support for progeny seeds and plants and tissue culture because the claims do not have identifying characteristics.

Applicants respectfully disagree with the Examiner's grounds for rejection and the above statements. However, in order to facilitate prosecution in this case applicants have amended the pending claims, without prejudice or disclaimer, to recite the characteristics of the parent plant.

Claims 54-81 have been rejected as allegedly failing to enable one of ordinary skill in the art to make or use the claimed invention. The Examiner has asserted that guidance is necessary because the phenotypic characteristics of plants are highly variable and therefore unpredictable.

The applicants respectfully disagree. When determining whether a specification enables one of ordinary skill in the art to make and use the claimed invention, the proper question to ask, as the Examiner mentioned on page 6, is whether practice of the invention would require undue experimentation. Undue experimentation is determined by an analysis of eight factors laid out in *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). The breadth of the claims is not unduly broad. The claims cover a one type of plant – broccoli. And the claims are further limited to defined heat tolerance regimens. The state of the prior art is highly developed for methods of plant breeding, which is what is required to enable one to make heat tolerant broccoli commensurate with the scope of the claims. The level of predictability is fairly high. While as the Examiner notes a given breed of broccoli will produce plants with some degree of variation, this variation is not significant and is already addressed in the claims with the variation in the head size produced. The specification provides abundant guidance for making the claimed broccoli by breeding. As the Examiner notes the specification discloses the production of numerous working examples of broccoli lines. The specification provides examples of 19 inbred lines and four self-incompatible lines. Finally, the quantity of experimentation is not undue. Cross-breeding of different broccoli lines to produce new broccoli with desired characteristics of each parent is routine. While it takes time, it is the typical method in this art. Thus, the specification enables one of ordinary skill in the art to make and use the invention because it does not require undue experimentation.

Claim Rejections – 35 U.S.C. § 112, Second Paragraph

Claims 54, 57-58, 60-61, 64-65, 67-68, 71-72, 74-75, 78-79 and 81 have been rejected as allegedly being indefinite in the recitation "commercially acceptable." The Examiner has stated

that "commercially acceptable" is a relative term that will vary depending on particular market or customer base. Applicants respectfully disagree. MPEP § 2173.05(b) states, "The fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph. Acceptability of the claim language depends upon whether one of ordinary skill in the art would understand what is claimed, *in light of the specification*." (Citations omitted, emphasis added). The instant specification provides abundant guidance for one of skill in the art as to what "commercially acceptable" entail. (See Page 5, line 19 to Page 6, line 2. Thus, one of skill in the art will be able to understand the metes and bounds of this claim term.

Claims 54, 60, 61, 67, 68, 74, 75 and 81 have been rejected as allegedly indefinite in the recitation "at least." The Examiner has stated that the recitation is indefinite because it is unclear how long the claimed plants may be exposed to the claimed maximum temperature and still be commercially acceptable. Applicants respectfully disagree. MPEP § 2173.05(c) states, "Generally, the recitation of specific numerical ranges in a claim does not raise an issue of whether a claim is indefinite." Further, MPEP § 2173.05(c), part II, indicates that open-ended numerical ranges such as the "at least" recitation are definite so long as they do not create inconsistencies with dependent claims. The claims do not need an upper limit in order to be definite. The recitation "at least" is not in any way inconsistent with any dependent claims.

Claims 57, 64, and 78 have been rejected as allegedly indefinite in the recitation "the seed of claim 54 [or 61 or 78]" for lack of antecedent basis. Applicants have amended the dependency of the claims so that they have proper antecedent basis.

Claims 59, 66, 73, and 80 have been rejected as allegedly indefinite in the recitation "the tissue culture according to claim 58 [etc]" because they are confusing because the claims from which they depend are to plants. Applicants respectfully disagree, given that there is clear antecedent basis for tissue culture in the parent claims. However, in order to facilitate prosecution in this case applicants have amended the pending claims.

Claim Rejections – 35 U.S.C. § 102

Claims 55-59, 62-66, 69-73, and 76-80 have been rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Heather et al. (J. Amer. Soc. Hort. Sci. 1992, Vol. 117, No. 6, pages 887-892). The Examiner has asserted that the claimed seed, progeny seed, plant or tissue culture lack limitations that would distinguish them from the broccoli plants taught by Heather et al.

Applicants respectfully disagree with the Examiner's grounds for rejection and the above assertion. However, in order to facilitate prosecution in this case applicants have amended the pending claims, without prejudice or disclaimer, to recite the limitations of the parent claim.

Claim 61 and 67 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Heather et al. The Examiner has stated that Heather et al. teach XPH 5168 broccoli plants comprising a center head diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of 95° F for at least one day during the growth cycle.

Applicants respectfully disagree. The XPH 5168 plants taught by Heather et al. do not produce commercially acceptable head when exposed to 95° F for at least one day *during the growth cycle*. Both table 4 and 5 indicate that XPH 5168 can produce "marketable quality" heads when exposed to elevated temperatures at six weeks which is before the growth of the head has begun or when the head is ready for harvesting at 11 or 12 weeks and is therefore at the end of the growth cycle. Both tables indicate that at six weeks, the plants were in the vegetative state, i.e., prior to bud development. In fact, both tables show that if exposed to elevated temperatures at all times in between when the head is actually growing, the heads produced by the plants are not of "marketable quality." In contrast, the claimed invention covers broccoli plants that produce commercially acceptable heads when exposed to 95° F for at least one day during the growth cycle. As such, Heather et al. is distinguished.

Claim Rejections – Double patenting

Claims 68-74 and 81 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 6,294,715.

Applicants respectfully request that the examiner hold this rejection in abeyance until such time as there is an indication of otherwise allowable subject matter. Only at that time will the applicants be able to determine whether an obviousness-type double patenting rejection applies to the allowed subject matter.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant(s) petition(s) for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 500852000101.

Respectfully submitted,

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APPENDIX OF THE PENDING CLAIMS

54. (Currently Amended) A commercially acceptable broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 90°F for at least 5 consecutive days during the growth cycle of said plant.

55. (Currently Amended) Seed produced by the plant of claim 54, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 90°F for at least 5 consecutive days during the growth cycle of said plant.

56. (Currently Amended) Progeny seed produced from crossing the broccoli plant of claim 54 with another plant, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 90°F for at least 5 consecutive days during the growth cycle of said plant.

57. (Currently Amended) A commercially acceptable broccoli plant or its parts produced from the seed of claim 56.

58. (Currently Amended) A commercially acceptable broccoli plant regenerated from tissue culture of the broccoli plant of claim 57, wherein such regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 90°F for at least 5 consecutive days during the growth cycle of said regenerated plant.

59. (Currently Amended) A tissue culture of the broccoli plant of claim 57 comprising regenerable cells selected from the group consisting of meristematic tissue, anthers, leaves,

ovules, roots, embryos, protoplasts and pollen, wherein such tissue culture, if regenerated, would produce a regenerated plant comprising a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 90°F for at least 5 consecutive days during the growth cycle of said regenerated plant.

60. (Currently Amended) A commercially acceptable regenerated broccoli plant regenerated from the regenerable cells of a tissue culture according to claim 59 wherein said regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said plain is exposed to a maximum temperature of at least 90°F for at least 5 consecutive days during the growth cycle of said plant.

61. (Currently Amended) A commercially acceptable broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plain is exposed to a maximum temperature of at least 95°F for at least 1 day during the growth cycle of said plant.

62. (Currently Amended) Seed produced by the plant of claim 61, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 95°F for at least 1 day during the growth cycle of said plant.

63. (Currently Amended) Progeny seed produced from crossing the broccoli plant of claim 61 with another plant, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 95°F for at least 1 day during the growth cycle of said plant.

64. (Currently Amended) A commercially acceptable broccoli plant or its parts produced from the seed of claim 63.

65. (Currently Amended) A commercially acceptable broccoli plant regenerated from tissue culture of the broccoli plant of claim 64, wherein such regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 95°F for at least 1 day during the growth cycle of said regenerated plant.

66. (Currently Amended) A tissue culture of the broccoli plant of claim 64 comprising regenerable cells selected from the group consisting of meristematic tissue, anthers, leaves, ovules, roots, embryos, protoplasts and pollen, wherein such tissue culture, if regenerated, would produce a regenerated plant comprising a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 95°F for at least 1 day during the growth cycle of said regenerated plant.

67. (Currently Amended) A commercially acceptable regenerated broccoli plant regenerated from the regenerable cells of a tissue culture according to claim 67 wherein said regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said plain is exposed to a maximum temperature of at least 95°F for at least 1 day during the growth cycle of said plant.

68. (Currently Amended) A commercially acceptable broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plain is exposed to a maximum temperature of at least 85°F for at least 15 days during the growth cycle of said plant.

69. (Currently Amended) Seed produced by the plant of claim 68, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity

when said plant is exposed to a maximum temperature of at least 85°F for at least 15 consecutive days during the growth cycle of said plant.

70. (Currently Amended) Progeny seed produced from crossing the broccoli plant of claim 68 with another plant, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 85°F for at least 15 consecutive days during the growth cycle of said plant.

71. (Original) A commercially acceptable broccoli plant or its parts produced from the seed of claim 70.

72. (Currently Amended) A commercially acceptable broccoli plant regenerated from tissue culture of the broccoli plant of claim 71, wherein such regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 85°F for at least 15 consecutive days during the growth cycle of said regenerated plant..

73. (Currently Amended) A tissue of the broccoli plant of claim 71 comprising regenerable cells selected from the group consisting of meristematic tissue, anthers, leaves, ovules, roots, embryos, protoplasts and pollen, wherein such tissue culture, if regenerated, would produce a regenerated plant comprising a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 85°F for at least 15 consecutive days during the growth cycle of said regenerated plant.

74. (Currently Amended) A commercially acceptable regenerated broccoli plant regenerated from the regenerable cells of a tissue culture according to claim 73 wherein said

regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said plain is exposed to a maximum temperature of at least 85°F for at least 15 days during the growth cycle of said plant.

75. (Currently Amended) A commercially acceptable broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plain is exposed to a maximum temperature of at least 80°F for at least 20 days during the growth cycle of said plant.

76. (Currently Amended) Seed produced by the plant of claim 75, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 80°F for at least 20 consecutive days during the growth cycle of said plant.

77. (Currently Amended) Progeny seed produced from crossing the broccoli plant of claim 75 with another plant, wherein such seed produces a broccoli plant comprising a center head having a diameter of 3 to 8 inches at maturity when said plant is exposed to a maximum temperature of at least 80°F for at least 20 consecutive days during the growth cycle of said plant.

78. (Currently Amended) A commercially acceptable broccoli plant or its parts produced from the seed of claim 77.

79. (Currently Amended) A commercially acceptable broccoli plant regenerated from tissue culture of the broccoli plant of claim 78, wherein such regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 80°F for at least 20 consecutive days during the growth cycle of said regenerated plant.

80. (Currently Amended) A tissue culture of the broccoli plant of claim 78 comprising regenerable cells selected from the group consisting of meristematic tissue, anthers, leaves, ovules, roots, embryos, protoplasts and pollen, wherein such tissue culture, if regenerated, would produce a regenerated plant comprising a center head having a diameter of 3 to 8 inches at maturity when said regenerated plant is exposed to a maximum temperature of at least 80°F for at least 20 consecutive days during the growth cycle of said regenerated plant.

81. (Currently Amended) A commercially acceptable regenerated broccoli plant regenerated from the regenerable cells of a tissue culture according to claim 80 wherein said regenerated plant comprises a center head having a diameter of 3 to 8 inches at maturity when said plain is exposed to a maximum temperature of at least 80°F for at least 20 days during the growth cycle of said plant.